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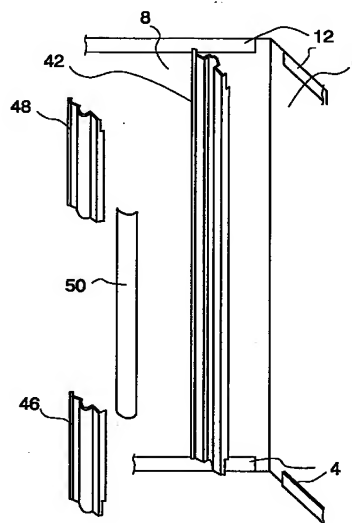
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**(54) Arrangement and procedure for the renewal of the interior decoration of an elevator car**

(57) The invention relates to an arrangement for the renewal of the interior decoration of an elevator car having a car frame which comprises walls, a floor and a ceiling, to whose interior surfaces the decorative elements are attachable. According to the invention, the wall panels (8) are made to dimensions smaller than the corresponding walls (32) the car frame, and the edges of the walls are coverable by edging elements (42) substantially overlapping the wall panels (8).



**Fig. 4**

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## Description

The present invention relates to an arrangement as defined in the preamble of claim 1 and to procedures as defined in the preambles of claim 7 and 11 for the renewal of the interior decoration of an elevator car.

The useful life of load-bearing structures of the elevator machinery, elevator shaft and elevator car is normally several decades. The interior decoration of the elevator car, the equipment installed on the landings as well as the elevator control equipment are considerably more short-lived due to wear and obsolescence of the technical solutions used. When a building is repaired, the parts of the elevator that are visible to the passenger are also renewed. On the other hand, the elevator itself can be modernized to achieve a higher level of travelling comfort and efficiency. In repair and modernizing work, the aim is to preserve old structures as far as possible. A modernization job repeated at relatively short intervals, considering the service life of the elevator as a whole, is the renewal of the interior decoration of the elevator car. When this is done, the frame structure of the elevator car, i.e. the raw car is preserved as it is, but substantially all parts visible from the inside of the elevator car are renewed. The floor material, wall and ceiling panels, illuminators, ventilation arrangements and push-button and display panels are replaced with new ones.

In modernization projects, situations involving extra work and expenses are frequently encountered. The dimensions of the cars to be renewed are not in accordance with the current standards, which is why the measurements of the various parts of the interior decoration have to be accurately defined beforehand. In many cases, this can only be done after the old decoration has been dismantled, in which case the modernization project keeps the elevator out of use for a long time. The fine adjustment of the measurements of the decorative parts can also be done at the site of installation, in which case the installation time at the site is prolonged accordingly, involving inconvenience to the people living in the building. Moreover, the quality of work tends to fall due to inappropriate working environment and tools. Especially in cases where the new interior decoration is expected to fit "seamlessly" with an old part of the car, a probable consequence is that extra costs are incurred and the installation has an unfinished appearance. This is the case e.g. when the wall panels of an elevator car are modernized while preserving the old front corners and door wall of the car.

Modernization substantially involves bringing the technical properties of the elevator to the level of the latest development. Many solutions related to ventilation, illumination and car buttons require a knowledge of the equipment and the latest development as well as elevator regulations. Old solutions, especially when combined with new parts, no longer fulfil the requirements valid at the time of modernization as regards convenience of use and even safety. Ordering partial assem-

blies associated with the modernization project from different suppliers leads to compatibility problems both in the execution of the work and in the final result, which increases the costs. New materials may cause e.g. a change in the weight of the elevator car so that the operational properties of the elevator are substantially changed, reducing the travelling comfort and reliability or even increasing the safety risk.

The object of the present invention is to achieve a new procedure and a new arrangement for the modernization of an elevator car, designed to avoid the problems described above and to achieve a cost-effective renewal of the elevator car so as to fulfil the customer's requirements, suited for both complete and partial modernization. A further aim is to achieve a solution which is independent of the type and manufacturer of the car. To achieve this, the arrangement of the invention is characterized by the features presented in characterization part of claim 1. The procedure of the invention is characterized by the features presented in the characterization part of claim 7. Another procedure of the invention is characterized by the features presented in the characterization part of claim 11. As for other preferred embodiments, reference is made to the subclaims.

The modernization of old elevator cars and the renewal of their interior decoration according to the invention is largely based on the use of overlapping adjacent elements, the elements being placed partially over each other, thus substantially reducing the need to accurately determine the dimensions of the elements in advance. This means that it is not necessary to know the exact measurements of the car to be provided with interior decoration, but any inaccuracies are compensated by sliding the overlapping components in relation to each other. If it proves necessary to alter the size of the components on site, this can be done by cutting a part off the underlying component. Therefore, no strict quality requirements need to be applied as to the accuracy of the cutting work or the appearance of the cut edge, because the edge will be covered by the overlapping component.

This principle of overlapping components provides a special advantage in the case of larger profiled components whose length is difficult to adjust in working site conditions. Using a so-called "telescopic technique", a decorative component is formed from three or more separate profiles, one of which is a base part of a size clearly under the required dimension, with two or more cover parts placed upon the base part. The cover parts can be slid over the base part so that the desired length is achieved. This is particularly advantageous to implement in the case of profiled corner mouldings and car button sets.

The solution of the invention allows the modernization to be performed according to two basic concepts. The first one involves a system designed to minimize the installation time, in which a basic examination is carried out on the old elevator car, taking the approximate main measurements of the car. Based on these rough

basic measurements, the overlapping principle makes it possible in this concept to deliver the goods to the site of installation so that by mounting the parts in an overlapping manner they can be installed without having to adjust or correct their measurements during installation.

The other concept of realization is based on the possibility of producing a sort of universal ready-made modernization packages at the factory. In this case, for the modernization of an elevator e.g. for 3..4 persons, it is possible to deliver such a standard basic package directly from storage while at the same time guaranteeing that the package contains a sufficient amount of material to allow the interior decoration of any elevator car for 3..4 persons to be easily modernized using simple manual tools. Similarly, a package of a correspondingly larger size is provided for elevators for 5..6 persons, and so on. This concept minimizes the delivery time.

The solution of the invention allows the modernization work at the site of installation to be carried out in a short time. The elevator is out of use for only a short time and the inconvenience for elevator users is minimized. The installation costs remain within reasonable limits as the work at the site of installation can be done quickly and material losses are small due to advance preparations. The various parts of the interior decoration, push-button boards, panels and edging elements can be manufactured in large series, thus keeping the costs per unit at a reasonable level. On the whole, both production and installation costs are low.

The compatibility of the interior decoration of the car with other parts of the elevator as well as its effect on them is taken into account so that the latest technical solutions can be utilized and the elevator car meets the requirements of elevator standards. For instance, the weight added to the elevator car can be minimized. Wiring and electronics built in the display and push-button panel provide a freedom to place the panel independently of where the push buttons were located previously.

The owner of the elevator and the orderer of the modernization have the chance to select the most appropriate technical properties. The solution also provides better possibilities regarding the choice of materials and visual properties in connection with modernization. For the implementation of the interior decoration, it is possible to select durable materials e.g. in view of vandalism.

In the following, the invention is described in detail by the aid of some of its embodiments by referring to the attached drawings, in which

- Fig. 1 presents an exploded view of a set of interior decoration elements as provided by the invention,
- Fig. 2a presents a cross-section through a door sill strip,
- Fig. 2b shows how the skirting is mounted,

- Fig. 2c presents a cross-section through the skirting strip and shows how the wall panel is mounted,
- Fig. 2d shows how the cornice strip is mounted,
- 3a and 3b presents cross-sections of profiled corner mouldings,
- Fig. 4 presents a corner illuminator element, and
- Fig. 5 presents a push-button and display panel for an elevator car.

When the entire interior decoration of an elevator car is to be modernized, all the wall and ceiling panels, floor surface materials, edging strips, illuminators and push-button and display panels of the elevator car are dismantled. What remains of the car is the so-called raw car, which comprises the frame and supporting structures and the exterior walls of the car. The interior decoration elements presented as detached parts in Fig. 1 are installed in the raw car. The details and manner of mounting of the interior decoration elements are described later on in connection with Figures 2-5. Skirting strips 4 and a door sill strip 6 are fitted on the edges of the floor surfacing 2. Wall panels 8 and ceiling panels 10 are mounted on the walls and the ceiling, respectively. On the door wall, a wall panel 9 and a corner moulding 21 or a corner moulding 21 alone, depending on the width of the door wall, is mounted. The side wall of the car may also join directly with the door jamb structure. The cornice strips 12 are mounted to join the wall and ceiling panels to each other. Part of the wall surface is covered by a car control panel 14, which comprises a set of car buttons and a display and possibly provided with separate cover parts 16 and 18 above and below the buttons. The corners of the car are provided with corner mouldings 20. The illuminators are fitted to the corner mouldings 20 (illuminator 22) or to the ceiling panel (illuminator 24). A mirror 26 is attached to a wall panel 8 or part of a wall panel is implemented as a mirror surface.

An important aspect of the invention is the overlapping or telescopic structure of different decorative components, which allows the use of standard-sized elements in most components. Moreover, the measurements of the components can be determined beforehand with a sufficient accuracy even before the old decorative parts are dismantled. Furthermore, when the installation is carried out by a so-called "stacking method", whereby the components are installed by mainly proceeding from below towards the top, the features of the invention can be best utilized. In the following, the details of the components are described mainly in the same order in which they are mounted.

The installation work is preferably started by fixing the floor surfacing. Many floor surface materials are easy to cut to suitable dimensions on site. In the door area, the floor surfacing 2 is extended so that it goes

some distance (preferably at least 1 cm) under the door sill profile 6 (Fig. 2a). At the edges next to the wall surfaces, the floor surfacing measurements are so chosen that the floor surfacing is about 1 cm narrower than the free floor surface of the raw car. As shown in Fig. 2c, the skirting strip 4 is mounted on top of the floor surfacing and fixed with screws, tape, stickers or equivalent to the bottom part of the wall. Massive corner mouldings (Fig. 3a and 3b) allow very large tolerances for the length of the skirting strips. For screw-on attachment or equivalent, the skirting strip is provided with elongated holes allowing the strip to be moved horizontally in both directions during installation (Fig. 2b). This arrangement makes installation easier, especially in cases where one end of the strip has to be located at an exact position. As shown in Fig. 3c, the fixing screw is immediately under the bend in the skirting, so it is normally invisible to the passenger.

After the skirting 4 has been mounted, the edge of the wall panel 8 is inserted between the top 30 of the skirting profile and the raw car wall 32 so that the lower edge of the wall panel rests on the horizontal part 34 of the skirting profile. The wall panel is fixed by means of glue or snap-on fasteners or screws. As illustrated by Fig. 2d, the vertical dimensional tolerance of the wall panel is determined by the vertical mounting allowance of the cornice strip 36 and the vertical dimensional tolerance of the wall panel is about one third of the height of the cornice strip. The cornice strip is fixed to the wall in a manner corresponding to the attachment of the skirting so that the upper edge of the cornice strip lies tightly against the ceiling panel. In the lateral direction, the cornice strip has a dimensional tolerance corresponding to that of the skirting as explained in connection with Fig. 2b. To allow ventilation in the car, the skirting and cornice strips are provided with holes 37 and 39 for ventilation.

The corner moulding consists of a massive corner profile 40, which extends onto the edges of the wall panels. The profiled corner moulding has a base part 42 which is fixed to the wall by means of studs 44. Fig. 3a shows a corner moulding mounted in a car with rounded corners. Fig. 3b shows a corner moulding mounted in a car with rectangular corners. The wide edges and useful design of the corner moulding allow the same corner profile to be used in both types of car and the edges of the corner moulding extend over the wall panel edges, covering their dimensional tolerance. The vertical dimension of the base part of the corner moulding is clearly below the height of the car, leaving a dimensional tolerance above and below the corner moulding. The cover of the corner moulding consists of at least two parts 46 and 48, which are attached to the base part by means of suitable fixing elements and mounting grooves formed in the moulding. Cover part 48 is slid up until it touches the ceiling and, similarly, cover part 46 is slid down until it touches the floor. Cover part 46 covers the mounting tolerance left at the end of the skirting strip 4 and, correspondingly, cover part 48 covers the end of

the cornice strip 12. The ends of the cover parts are provided with suitable notches to fit to the skirting and cornice strips. Thus, the corner mouldings are closely fitted onto the skirting and cornice strips, wall and ceiling panels and the floor surfacing. As shown in Fig. 4, part of the corner moulding may consist of an illuminator 50, which is attached to the base part. In this case, the cover parts overlap the upper and lower edges of the illuminator, respectively. The massive construction of the corner mouldings also provides the alternative of integrating the car buttons and/or car ventilation with a corner moulding.

Fig. 5 shows how a push-button and display board 52 is mounted between two wall panels. In this case, too, the board height is below the car height, and cover parts 54 and 56 are mounted on top of the upper and lower parts of the board. The cover parts extend up to the ceiling panel and down to the floor surface in the way explained in connection with the corner mouldings. At least the cover parts of the board are provided with suitable notches for the skirting strip 4 and the cornice strip 12. Alternatively, the push-button and display board can also be mounted in a corner moulding, like the illuminator in Fig. 4. The raw car wall is provided with an opening 58 in which the equipment associated with the push-buttons and displays is fitted. The wiring needed for the car buttons is passed through this opening to the back of the push-button and display board 52. Because of its curved shape, the board need not necessarily be placed exactly in the same location where the control panel was in the old interior decoration of the car, but the car buttons and displays can be placed in different locations on the walls or in corner mouldings. The required equipment is placed on the backside of the board 52 and only the wiring is passed through the opening 58 into the raw car. Ventilation can also be arranged via the push-button and display board.

In the foregoing, the invention has been described by the aid of some of its embodiments. However, the presentation is not to be regarded as constituting a limitation, but the embodiments of the invention may vary within the limits defined by the following claims.

## Claims

1. Arrangement for the renewal of the interior decoration of an elevator car, said car having a car frame which comprises walls, a floor and a ceiling, to whose interior surfaces decorative elements, like wall panels, floor surface material and ceiling panels, respectively are attachable, **characterized** in that the wall panels are made at least in the horizontal direction to dimensions smaller than the corresponding walls (32) of the car frame, and that the edges of the wall panels (8) are coverable by edging elements (42) substantially overlapping the wall panels (8).
2. Arrangement as defined in claim 1, **characterized**

in that the wall panels (8) and ceiling panels (10) are made to dimensions smaller than the corresponding walls (32) and ceiling of the car frame, that the upper edges of the wall panels (8) and the edges of the ceiling panel (10) are coverable by cornice strips (12) substantially overlapping the wall panels (8) and ceiling panels (10) and that the lower edges of the wall panels (8) and edge of the floor surface are coverable by skirting strips (4).

3. Arrangement as defined in claim 1 or 2, **characterized** in that the horizontal edging elements, cornice strips (12) and skirting strips (4), are made shorter in their lengthways dimension than the width of the respective wall panel (8) and that the ends of the cornice strips and skirting strips are coverable by profiled corner mouldings (42).

4. Arrangement as defined in any of the claims 1 - 3, **characterized** in that it comprises a control panel (52) fitted between two wall panels (8) and overlapping the wall panels, and covers (54,56) fitted above and below the control panel and extending in a telescopic manner over the upper and lower part of the control panel (52), respectively, and over the cornice strip (12) and the skirting strip (4), respectively.

5. Arrangement as defined in any one of claims 1 - 4, **characterized** in that the decorative elements are installable using a mounting method of a substantially stacking nature, whereby the decorative elements are mounted by proceeding from below towards the top.

6. Arrangement as defined in any one of claims 2 - 5, **characterized** in that the skirting strips (4) or the corner mouldings (12) are provided with holes (37) for ventilation.

7. Procedure for renewing the interior decoration of an elevator car which has a raw car comprising exterior walls, a ceiling and a floor, **characterized** in that

- at least the wall panels (8) are fabricated to dimensions such that definite mounting tolerances are left at the edges of the panels,
- the wall panels are mounted in place and
- profiled corner mouldings (42) are mounted so as to cover the side edges of the wall panels from floor to ceiling.

8. Procedure as defined in claim 7, **characterized** in that before the corner mouldings (42) are mounted, the ceiling panels (12) and the floor surface material are mounted in place and skirting strips (4) and cornice strips (12) are mounted so that they cover the lower and upper edges of the wall panels (8).

9. Procedure as defined in claim 7 or 8, **characterized** in that

- the internal dimensions of the car are measured as approximate values,
- the wall (8) and ceiling (12) panels are fabricated in accordance with the measurements, with suitable mounting tolerances,
- the old interior decoration is dismantled, and
- the installation is carried out.

10. Procedure as defined in claim 7, 8 or 9, **characterized** in that

- a series of panels (8,10) of standard dimensions is produced, and
- for installation, a suitable combination of these is selected to cover the wall and ceiling surfaces.

11. Procedure for renewing the interior decoration of an elevator car which has a raw car comprising exterior walls, a ceiling and a floor, **characterized** in that

- the internal dimensions of the car are measured as approximate values,
- the wall (8) and ceiling (12) panels are fabricated in accordance with the measurements, with suitable mounting tolerances,
- the old interior decoration is dismantled,
- the wall panels are mounted in place and
- profiled corner mouldings (42) are mounted so as to cover the side edges of the wall panels from floor to ceiling.

12. Procedure as defined in claim 11, **characterized** in that

- a series of panels (8,10) of standard dimensions is produced, and
- for installation, a suitable combination of these is selected to cover the wall and ceiling surfaces.

13. Procedure as defined in claim 11 or 12, **characterized** in that before the corner mouldings (42) are mounted, the ceiling panels (12) and the floor surface material are mounted in place and skirting strips (4) and cornice strips (12) are mounted so that they cover the lower and upper edges of the wall panels (8).

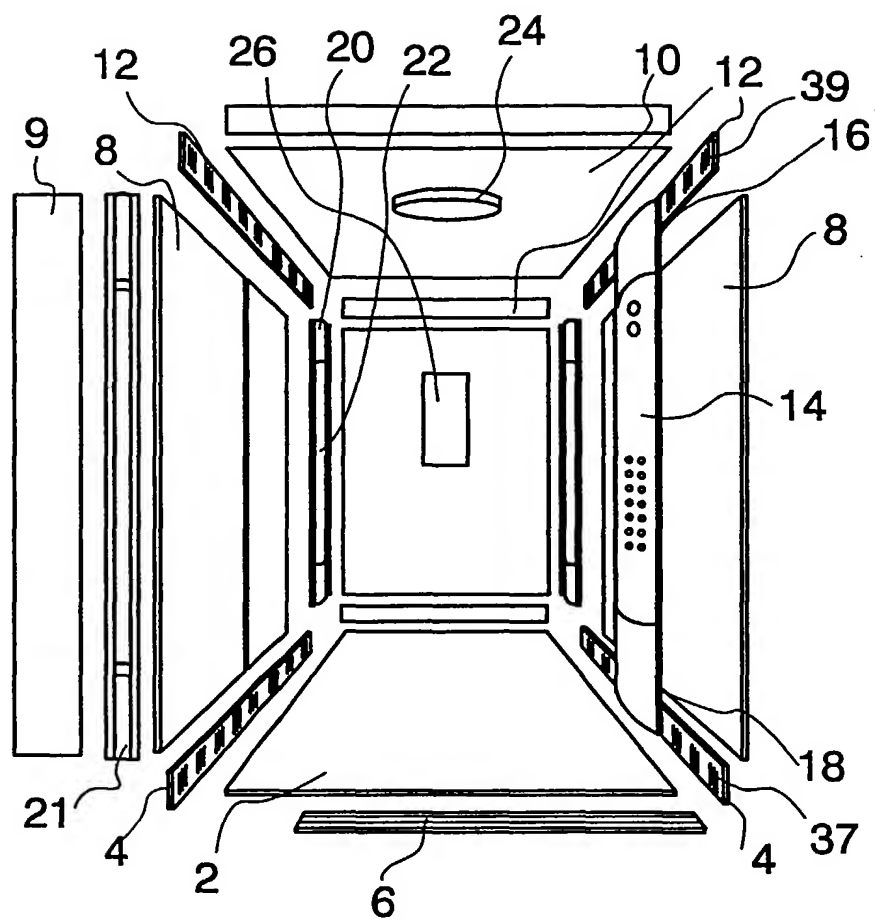


Fig. 1

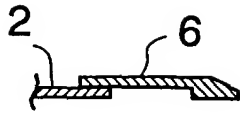


Fig. 2a

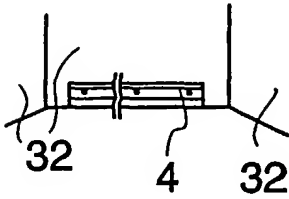


Fig. 2b

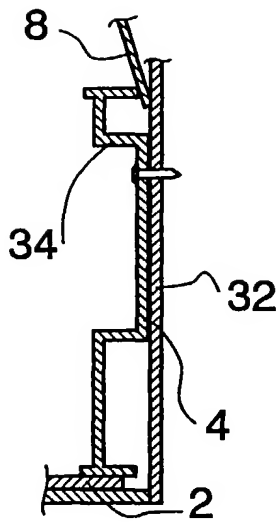


Fig. 2c

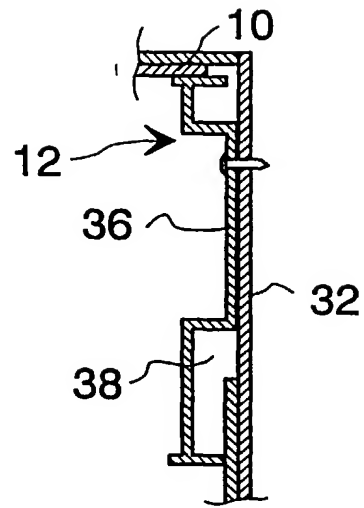


Fig. 2d

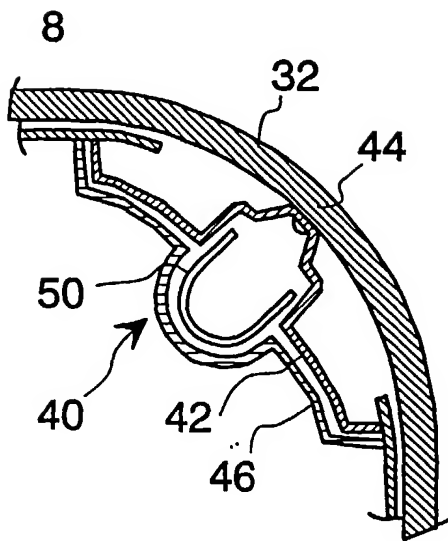


Fig. 3a

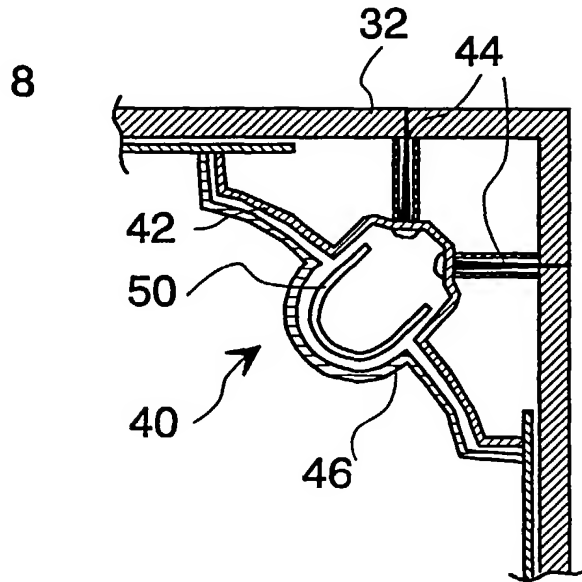


Fig. 3b

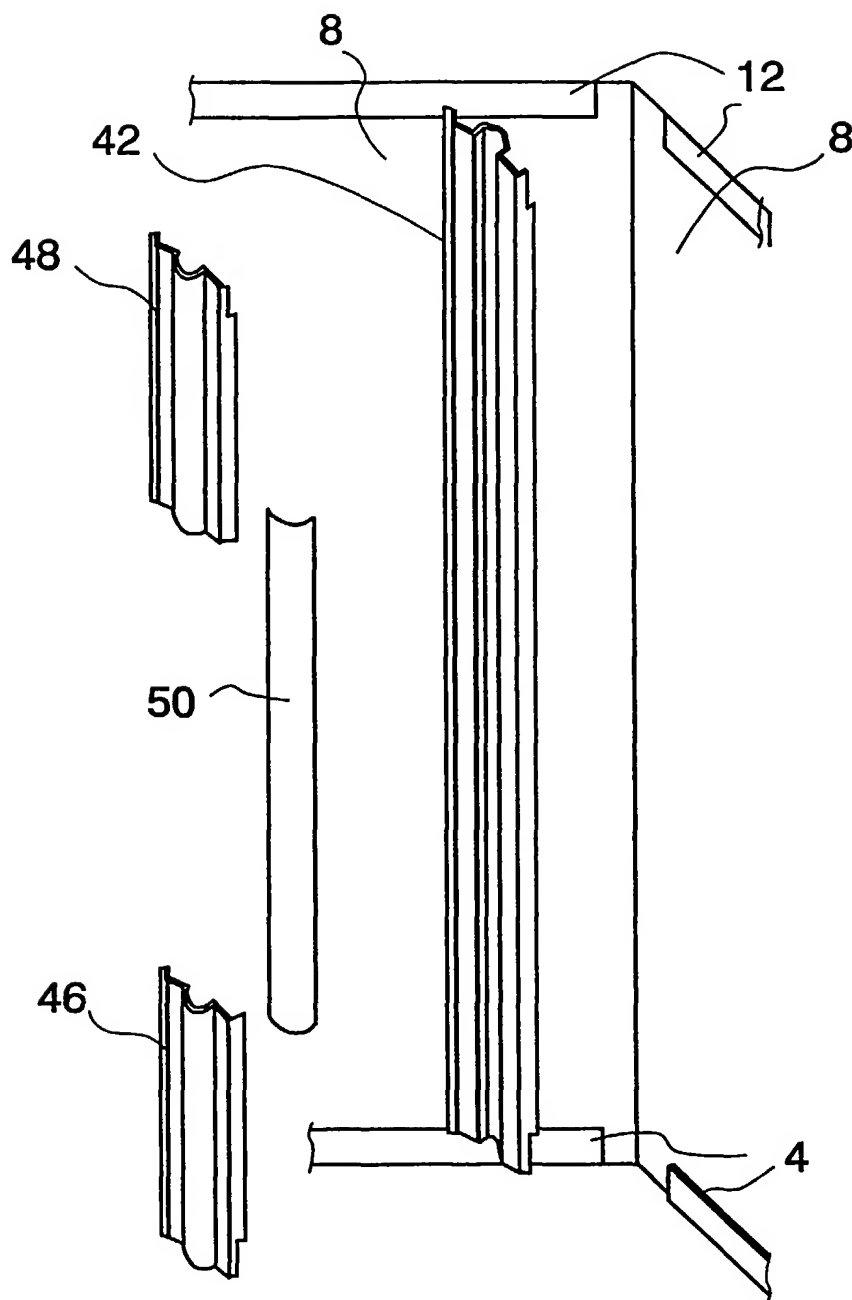


Fig. 4



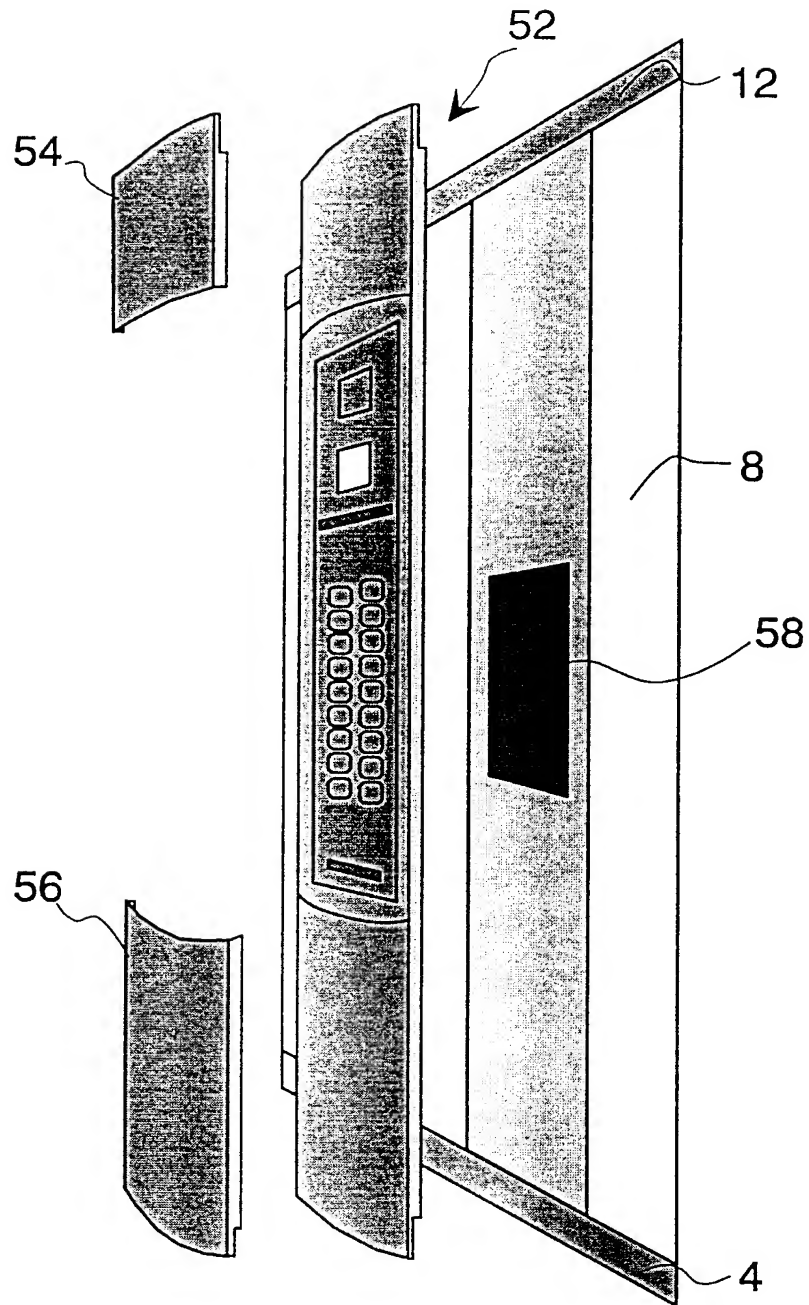


Fig. 5

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**ABSTRACT:**

CHG DATE=19990617 STATUS=O> The invention relates to an arrangement for the renewal of the interior decoration of an elevator car having a car frame which comprises walls, a floor and a ceiling, to whose interior surfaces the decorative elements are attachable. According to the invention, the wall panels (8) are made to dimensions smaller than the corresponding walls (32) the car frame, and the edges of the walls are coverable by edging elements (42) substantially overlapping the wall panels (8). 